Germination of Seed of Koa Haole (*Leucaena glauca* (L.) Benth.)[1]

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The data in this paper attest to the accuracy of a statement by the author to the effect that untreated seed of koa haole (*Leucaena glauca* (L.) Benth.) may require several years to germinate under natural conditions (Akamine, 1942). The question has been raised as to the actual time required for the seed to germinate; consequently, germination tests were conducted in soil flats in the greenhouse. Each test lot consisted of 1,000 seeds, with emergence of seedlings as the criterion of germination. Weekly germination counts were made and sprouted seedlings were removed from the flats. The soil was kept moist throughout the germination period, and optimum conditions for germination were maintained. Seeds that were held for a period of time prior to germination were stored at room temperature.

Results, shown in Figure 1, indicate that 1-month-old seed of one lot germinated more than 90 per cent in 1 year, whereas seed of similar age, but of another lot, germinated only approximately 20 per cent in nearly 4 years. Germination of the 2-month-old seed of one lot differed from that of another lot, as did the germination of the 10-month-old seed, although not to the extent of the other age groups.

Delayed germination in koa haole seed is caused by an impervious seedcoat ("hard" seed) (Akamine, 1942). The differences in germination of the various seed lots were found to be related to the differences in the percentage of hard seeds, i.e., the higher the percentage of hard seeds, the lower the rate of germination. These seeds, recovered from the slow germinating lots at the end of the experiment, germinated rapidly when scarified with sulfuric acid or nicked with a knife. The results indicate that the least dormant seed requires about 1 year for maximum germination, but that the more dormant the

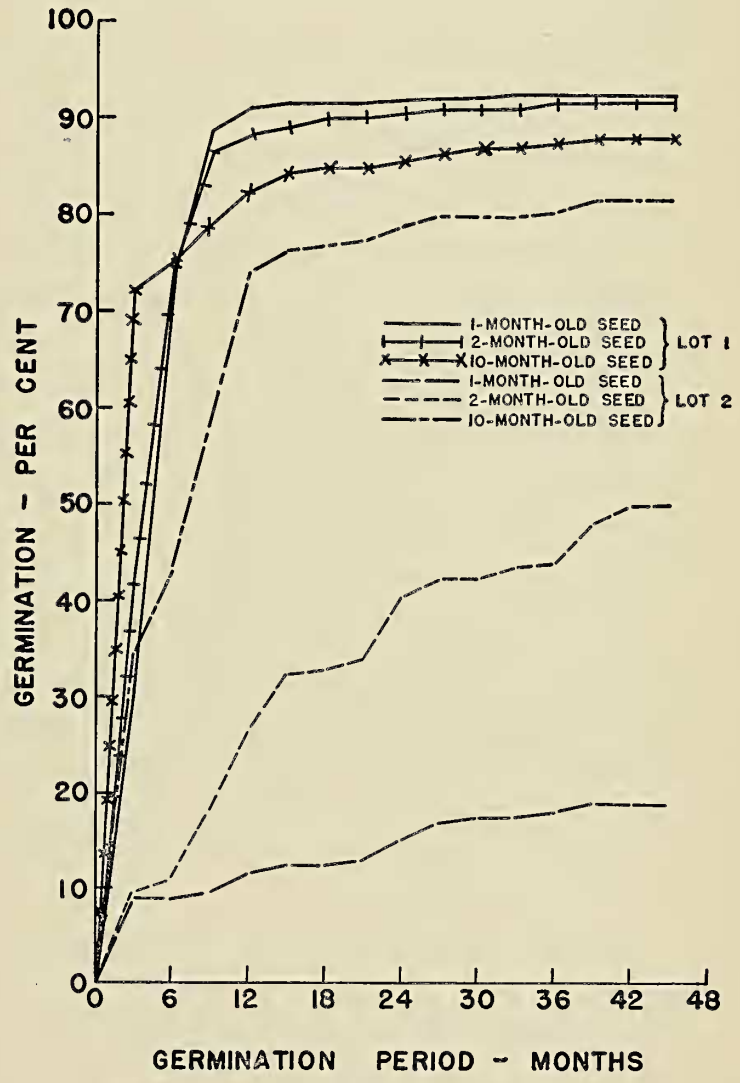

Fig. 1. Germination of koa haole seeds of different ages and lots.

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TABLE 1

EFFECT OF AGE ON GERMINATION OF KOA HAOLE SEED

GERMINATION PERIOD (MONTHS)	PERCENTAGE GERMINATION OF SEEDS PLANTED							
	3 DAYS AFTER HARVEST	1 MONTH AFTER HARVEST	2 MONTHS AFTER HARVEST	4 MONTHS AFTER HARVEST	6 MONTHS AFTER HARVEST	8 MONTHS AFTER HARVEST	10 MONTHS AFTER HARVEST	12 MONTHS AFTER HARVEST
4	50.4	50.2	47.5	79.2	80.5	74.6	73.5	44.0
8	80.1	86.2	84.1	89.4	86.6	77.3	76.9	73.4
12	89.9	91.2	88.6	90.5	88.3	78.1	82.5	83.0
16	90.4	91.4	89.4	91.3	89.8	80.8	84.6	84.6
20	90.9	91.6	90.0	92.2	90.7	81.2	85.0	85.0
24	91.4	92.0	90.7	92.6	90.9	81.3	85.7	86.4
28	91.5	92.1	90.9	92.6	91.6	82.5	86.8	87.2
32	91.6	92.2	91.1	93.0	92.0	83.1	86.9	87.4
36	92.0	92.6	91.4	93.1	92.0	83.1	87.3	87.6
40	92.0	92.6	91.4	93.1	92.0	83.2	88.2	89.4
44	92.0	92.6	91.5	93.2	92.4	83.8	88.2	89.4
48	92.0	92.6	91.6	93.4	92.4	83.8	..	..
52	92.3	92.6	91.7	93.4	..	..	..	..
56	92.3	92.6	..	..	..	..	..	..

seed the longer the period required for germination.

In a subsequent test, seeds harvested at the same time were stored for various periods before germinating. The data presented in Table 1 show that seeds planted 3 days to 6 months after harvest required approximately 1 year to produce a germination of about 90 per cent. Seeds planted 8 to 12 months after harvest were delayed in emergence. It appears that these seeds will require approximately 4 years to attain a germination of 90 per cent.

In a final experiment, the germination of old seeds was studied. The percentage germination of 17-month-old seed was 60.7, 66.8, 68.3, and 69.2 at the end of the first, second, third, and fourth years, respectively. At the end of similar periods, the percentage germination of 10-year-old seed was 56.6, 66.0, 67.6, and 71.7, respectively.

The data presented show that the time required for maximum germination of untreated koa haole seed under optimum conditions in the soil varied from 1 to 4 or more years, depending on the number of hard seeds. Prolonged storage under ordinary conditions tends to extend the dormant period. Koa haole seeds remain viable at ordinary storage conditions for as long as 10 years.

REFERENCE

AKAMINE, ERNEST K. 1942. *Methods of increasing the germination of koa haole seed.* Hawaii Agr. Expt. Sta. Cir. 21, 14 pp.